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Application No. 10/098,683

Amendment dated December 19, 2007

Reply to Office Action of September 28, 2007

54, 67, and 104-106)." The Examiner indicates that "Applicant simply disclosed bone fusion promoting material, such as hydroxyapatite, tricalcium phosphate, and bone morphogenetic protein."

As discussed below, hydroxyapatite and tricalcium phosphate are generally used in solid form as fusion promoting materials, and bone morphogenetic protein (BMP) is generally used in liquid form as a fusion promoting material. In fact, in the case of the implant coatings referenced in Applicant's specification, Applicant submits that, as used to promote bone fusion, the solid states of hydroxyapatite and hydroxyapatite tricalcium phosphate, and the liquid state of BMP are inherent properties of those materials. Table 1 lists scholarly articles confirming the above-discussed inherent properties of hydroxyapatite, tricalcium phosphate, and BMP.

MATERIAL	STATE DURING USE	REFERENCE
Hydroxyapatite	Solid	See, e.g., <u>Comparison of Hydroxyapatite and Hydroxyapatite Tricalcium-Phosphate Coatings</u> , The Journal of Arthroplasty, Volume 17, Issue 7, Pages 902-909, T. Jinno. Included as Attachment A.
Hydroxyapatite Tricalcium Phosphate	Solid	See, e.g., <u>Comparison of Hydroxyapatite and Hydroxyapatite Tricalcium-Phosphate Coatings</u> , The Journal of Arthroplasty, Volume 17, Issue 7, Pages 902-909, T. Jinno. Included as Attachment A.
Bone Morphogenic Protein	Liquid	See, e.g. <u>Bone morphogenetic proteins: basic concepts</u> , Neurosurg Focus, Volume 13 (6), Pages 1-6, S.S. Rengachary SS. Included as Attachment B.

As discussed in the first of the above-referenced scholarly articles (Attachment A), hydroxyapatite and hydroxyapatite tricalcium phosphate are used in solid form when used as to promote fusion. Furthermore, as discussed in the second of the above-referenced scholarly articles (Attachment B), BMP is used in liquid form when used to promote fusion. The second above-referenced scholarly article (Attachment B) indicates that BMP is generally used with a carrier such as hydroxyapatite and hydroxyapatite tricalcium phosphate. Accordingly, given the inherent properties of hydroxyapatite, hydroxyapatite tricalcium phosphate, and BMP, Applicant submits that

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(as amended in the Applicant's Office Action Response of June 18, 2007) the abstract and claims 54, 67, and 104-106 are supported by the original disclosure. As such, Applicant submits that the Examiner's respective objection and rejection under 35 U.S.C. §§ 132(a) and 112, first paragraph, have been traversed.

Additionally, the Examiner rejected claims 54-65, 67-90, and 92-108 (including independent claims 54 and 79) under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,026,373 to Ray et al. ("Ray"). In doing so, the Examiner indicates that "it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the bone growth promoting materials as claimed in Ray's implant to promote new bone growth, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of design choice."

Under 35 U.S.C. § 103(a), a claimed invention is obvious "if differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." In KSR International Co. v. Teleflex Inc. et al., the Supreme Court reaffirmed the framework for governing obviousness under 35 U.S.C. § 103(a) is set forth in Graham et al. v. John Deere Co. of Kansas City et al., 383 U.S. 1, 148 U.S.P.Q. 459 (1966). (See KSR v. Teleflex, 127 S.Ct. 1727 (2007)). Under Graham v. John Deere, the question of obviousness is resolved on the basis of factual determinations including (1) the scope and content of the prior art, (2) the differences between the claimed invention and the prior art, (3) the level of ordinary skill in the pertinent art, and (4) where in evidence, so-called secondary considerations. (Graham v. John Deere, at 17-18, 148 U.S.P.Q. at 467).

In response, note that independent claim 54 recites an apparatus comprising an interbody spinal fusion implant, and a liquid fusion promoting material and a solid fusion promoting material provided in the hollow interior of the implant. Furthermore, note that independent claim 79 recites an apparatus comprising an interbody spinal fusion

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implant, and a bioactive material and a bioresorbable material provided in the hollow interior of the implant. Ray does not teach or suggest an interbody spinal fusion implant combined with liquid and solid fusion promoting materials as recited in independent claim 54, or an interbody spinal fusion implant combined with bioactive and bioresorbable materials as recited in independent claim 79.

Furthermore, besides making an assertion that "it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the bone growth promoting materials as claimed in Ray's implant to promote new bone growth," the Examiner has not pointed to any teaching or suggestion in the prior art affording such an assertion. Moreover, the Examiner overestimates the level of ordinary skill in the art at the time the invention was made. The present application has a priority date of March 28, 1994. As such, Applicant submits that, as of the priority of the present application, it would not have been obvious to one of ordinary skill in the art to use the liquid and solid fusion promoting materials of independent claim 54 and the bioactive and bioresorbable materials of independent claim 79.

Given the priority date of the present application and the lack of support for the Examiner's contentions used as the basis for the rejections under 35 U.S.C. § 103(a), Applicant submits that the Examiner's rejection of independent claims 54 and 79 cannot be maintained. Accordingly, Applicant submits that independent claims 54 and 79 are not obvious in view of the Examiner's rejection under 35 U.S.C. § 103(a) based on Ray.

Applicant submits that independent claims 54 and 79 are patentable and that dependent claims 55-65, 67-78, 80-90, and 92-108, dependent from one of independent claims 54 and 79, or claims dependent therefrom, are patentable at least due to their dependency from an allowable independent claim.

In view of the foregoing remarks, it is respectfully submitted that the claims, as amended, are patentable. Therefore, it is requested that the Examiner reconsider the outstanding rejections in view of the preceding comments. Issuance of a timely Notice of Allowance of the claims is earnestly solicited.

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To the extent any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this reply, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 50-3726.

Respectfully submitted,

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